

definition is also quite equal to the Huyghenian at all parts of the field.

The benefit of this eye-piece is also strikingly apparent in viewing clusters, such as the *Pleiades*, *Presepe*, and others; in which small stars are brought up by the increase of power and light, without losing the advantage of a large field; and in the Great Nebula of *Orion*, the effect is very beautiful, allowing the employment of a power which before was disadvantageous, as it made the object dim, and contracted the field; which is now large, and the nebula very brilliant. The division of double stars is rendered easier by this eye-piece, and the range of the telescope among small ones extended. For example, persons who could not see ϵ *Lyræ* quadrupled with the Huyghenian of 123, had no difficulty in doing so with the Aplanatic, while the detail of the planets, and generally every object, is more readily appreciated.

I send herewith sketches of the construction of the three forms of the eye-piece, viz. the Huyghenian, Kellner's, and the Aplanatic, for comparison; and also place the instruments themselves before you.*

Highbury, June 10, 1862.

On the Appearance of Jupiter without a Visible Satellite,
Sept. 1843. By the Rev. W. R. Dawes.

It has been lately suggested to me by the Astronomer Royal, that a remarkable phenomenon, which I happened to observe many years ago, ought to be recorded where it might be readily referred to; and that in fact there could not be a more suitable repository for it than the Royal Astronomical Society. I have much pleasure in acting upon this suggestion, being assured that no other apology can be needed for offering to the Society an observation which was made nearly nineteen years ago. I refer to the appearance of *Jupiter* without a visible satellite in September 1843. The observation of this rare phenomenon was immediately afterwards communicated to *The Times* newspaper in a letter, which principally referred to another Jovian phenomenon, namely, the dark transit of one of his satellites. I supposed at the time that the solitary appearance of *Jupiter* would be extensively observed; and that many communications would be made to the Society by observers possessing the means of more accurately noting the *times* of the

* The sketches and instruments were exhibited at the Meeting of the Society.—ED.

different occurrences than I happened to have on that occasion. Had I been aware that not a single notice of it would be sent to the Society, I should certainly have made a communication, though in some respects imperfect, in time for the first meeting of the then ensuing session. I mention these circumstances as furnishing the only apology I can offer for having omitted to send some account of the observation to the Society immediately.

On 1843 September 27, in the early part of the evening, *Jupiter* appeared with all his four satellites very near him, and all approaching him. The *fourth* satellite passed on to the disk soon after 8^h 30^m G.M.T. This I observed at Mr. Bishop's observatory, with his equatoreal refractor of 7 inches aperture, by Dollond. At about 9^h 50^m I again directed the telescope to the planet, which very soon afterwards passed behind a tree; and as the state of the air was too unfavourable for observations of double stars, in which I was almost entirely occupied, I repaired to my own residence in Park Place, and turned upon the planet a very excellent 43-inch refractor of 2.7 inches aperture by Dollond, power 113.

Soon after 10^h G.M.T. (time not exactly noted) the *first* satellite passed on to the disk of *Jupiter*.

At 10^h 35^m \pm the *second* satellite was occulted.

At 11^h 55^m \pm the *third* satellite passed on to the disk.

Jupiter was then without a visible satellite.

At 12^h 30^m \pm the *first* satellite passed off the disk.

At 13^h 30^m \pm the egress of the *fourth* satellite occurred.

It appears, therefore, that for about an hour and twenty minutes the *third* satellite was the only one visible. For about thirty-five minutes *Jupiter* was without any visible satellite. And after the egress of the *first* satellite it was the only visible attendant for rather more than an hour.

The uncertainty of the times specified arises from the fact, that those which were noted at all at the instant of the occurrence, were taken from a pocket-watch, the precise error of which was unknown. And in one instance, the time was estimated from the supposed interval which had elapsed between the occurrence of the phenomenon and the procuring of a light, which was not at hand at the instant. It was this uncertainty which deterred me from presenting to the Society an account of the observation, hoping that others would be presented containing details as to time more accurately noted.

Hopefield Observatory, Haddenham, Thame, May 1862.